

Hydrogen Peroxide Paint Stripping

The helium tank farm and ancillary equipment, which supports Brookhaven National Laboratory's (BNL's) RIHC facility, needed to be stripped down to bare metal and repainted. Standard options would have included either grit blasting the paint off or using hazardous methylene chloride based strippers. The manpower costs, safety concerns and hazardous materials disposal costs, made these standard methods economically unfeasible for the 47 helium tanks and associated equipment.

One of BNL's Plant Engineering Supervisors read about a process that Napier Environmental Technologies, Inc had developed for stripping paints off substrates (and distributed through Pittsburgh Plate and Glass (PPG)). The process involved spraying on a proprietary hydrogen peroxide mixture, waiting 12-24 hours, then using a broom or squeegee to wipe off the peeling paint layers, and then power washing to remove any lingering paint flakes.

The waste products included the wastewater from the power washing of the tanks and the removed paint flakes. The wastewater was collected and evaporated in an on-site water eater due to residual levels of acetone and 2-butanone, which was of concern due to potential groundwater impact. The paint chips (which were tested as lead-free) were containerized into 55-gallon drums and disposed of as industrial waste.

The following pictures photo-document the stripping procedure. (Click on photos to enlarge)



Photo #1 – Spray on application of the hydrogen peroxide stripper – notice the containment structure to capture the water from the power wash process and the burlap to capture the paint chips.



Photo #2 – paint chip removal process with a squeegee – notice the ease of removal and the minimal necessary PPE (work clothes, eye protection and gloves.)



Photo #3 – Completely stripped tank – ready for priming and painting



Photo #4 Completed tank



Photos #5 & #6 - Application of the hydrogen peroxide stripper to the oil mist eliminators and the efficacy of the product over time.



Photos #7 & #8 – Oil mist eliminators ready to be squeegeed



Photo #9 – Completely stripped oil mist eliminators – ready for priming and painting – note the limited spacing between columns and how difficult it would have been to use conventional methods to remove the paint.



Photo #10 Completed oil mist eliminators.

The use of the hydrogen peroxide paint stripper is estimated to have saved BNL in excess of \$100,000 and at least 50% of labor and waste disposal costs. The process has also been used by BNL to strip the paint off fuel oil tanks, which needed to be re-coated.